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REMARKS

Claims 1-57 are pending and stand rejected in the above-captioned application. Claims 45 and 56 have been amended, and claims 58-61 have been added.

I. Rejection Under 35 U.S.C. §112, second paragraph

Claims 45-56 were rejected under 35 U.S.C. §112, second paragraph as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the basis for the Examiner's §112 rejection is that there is allegedly insufficient antecedent basis for the term "photoimaggable polymer layer" in claims 45 and 56. The Examiner was correct in assuming that Applicant was actually referring to "ablatable" layers in claims 45 and 56. Those claims have been amended, removing the basis for the Examiner's §112 rejection.

II. Double Patenting Rejection

Claims 1-57 were provisionally rejected under 35 U.S.C. §101 as claiming the same invention as that of claims 1-16, 18, 22-28, 39-58, 61-64, 66-70, 77-79 and 82 of copending application no. 09/394,012. To overcome this rejection, Applicants are expressly abandoning copending application no. 09/394,012 and pursuing the conflicting claims in this application. Thus the basis for the Examiner's statutory double patenting rejection has been removed.

III. Rejections Under 35 U.S.C. §102(e)

Claims 1-8, 10-16, 18, 19, 24-27, 30-43 and 57 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Quake et al. (U.S. Pat. 6,221,654) ("Quake"). Applicant respectfully disagrees with the Examiner's assertion that Quake anticipates these claims.

A reference cannot anticipate a claim under §102(e) unless the reference teaches every element of the claim. MPEP 2131. As explained more fully below, Quake does not appear to disclose all of the elements of independent claims 1, 25, and 57. If those independent claims are not anticipated by Quake, then the claims dependent on those claims cannot be anticipated. Thus, Applicants assert that none of claims 1-8, 10-16, 18, 19, 24-27, 30-43 and 57 are anticipated under §102(e) by Quake.

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As the Examiner stated in the Office Action, the process of fabricating the microfluidic devices in Quake appears to be disclosed in Figures 5A-5D, and the accompanying text from col. 15 line 48 to col. 18 line 32. The disclosed process comprises the following steps: (1) forming an oxide layer on the top surface of the substrate (col. 16 lines 2-5); (2) coating the oxide layer with a photoresist layer (col. 16 lines 6-7); (3) shining light through a patterned photomask onto the photoresist layer (col. 16 lines 24-28; Figure 5A); (4) removing the more soluble portion of the photoresist with a "suitable etchant", thus transferring the photomask's pattern to the photoresist layer (col. 16 lines 6-34, Figures 5A and 5B); (5) etching the oxide layer to form the photomask's pattern in the oxide (col. 16 lines 35-37; Figures 5B and 5C); (6) **removing the photoresist** (col. 16 lines 37-38; Figures 5B and 5C); (7) etching the pattern in the oxide layer into the silicon substrate (col. 16 lines 37-42); and (8) covering and sealing the etched silicon substrate (col. 18 lines 22-25). As in most standard photolithographic processes, the photoresist in the Quake process is a **temporary layer that is not part of the completed device**. The absence of photoresist in Quake's microfluidic devices can be confirmed by looking at the cross sectional view of the completed devices in Figure 2, in which the cover layer (66) is directly attached to the substrate (62) (col. 7 lines 42-46). The cover layer could not possibly be bonded to the previously removed photoresist layer.

Quake cannot anticipate claim 1. In the pending Office Action, the Examiner seems to assume that the "polymer layer" in claim 1 corresponds to the photoresist layer in Quake, and that the "second planar substrate" in claim 1 corresponds to the cover layer in Quake. The method of claim 1 requires the step of "overlying a second planar substrate on the polymer layer to seal the one or more grooves in the polymer layer", so Quake cannot anticipate claim 1 because the cover layer in Quake does not overlay the photoresist layer. As previously discussed, the photoresist layer in Quake is removed before the cover plate is attached, so the cover plate is directly attached to the silicon substrate. Since Quake does meet the claim 1 limitation that a second planar substrate overlay a polymer layer, Quake cannot anticipate claim 1.

Similarly, Quake cannot anticipate claims 25 and 57. Both claim 25 and 57 require that a "second planar substrate layer" mate with and overlay a "photoimaggable polymer layer". As previously discussed, the photoresist layer in Quake, which presumably corresponds to the "photoimaggable polymer layer" in claims 25 and 57, is removed before the cover plate is placed onto the Quake device. Furthermore, the cover plate in Quake is mated directly with the

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silicon substrate. See e.g. Quake Figure 2. Since the device in Quake does not meet the claim 25 and 57 limitation that a "second planar substrate layer" mate with and overlay a "photoimagable polymer layer", Quake cannot anticipate claims 25 and 57.

In conclusion, independent claims 1, 25, and 57 are not anticipated by Quake under §102(e). Since dependent claims contain all of the limitations of the independent claims on which they are dependent, all of the claims dependent on claims 1 and 25 are also not anticipated by Quake.

Claims 45-55 were rejected under 35 U.S.C. §102(e) as allegedly being anticipated by Chow et al. (U.S. Pat. 6,167,910) ("Chow"). Although Chow does appear to disclose the use of laser ablation to form grooves in a substrate, Chow does not meet all of the limitations of independent claim 45. Claim 45 requires that the claimed device have an ablatable layer disposed on a non-ablatable layer, and that at least one groove be ablated entirely through the depth of the ablatable layer. Chow does not appear to disclose a device that has both ablatable and non-ablatable layers. Ablatable and non-ablatable layers can be attached together before the grooves extending through the ablatable layer are formed. Application pg. 10 lines 8-12. In contrast, it appears that the various layers in Chow have to be separately patterned before they are attached together. See e.g. Chow Figure 1A. Separate patterning would be necessary, for example, if all of the layers in a device were made of the same material. In that case, it would be practically impossible to ablate a groove entirely through one layer without affecting the other layer. If, on the other hand, if one layer were ablatable and the other layer non-ablatable, the ablatable layer could have a groove ablated entirely through it without affecting the non-ablatable layer. Since Chow does not anticipate claim 45, the claims dependent on claim 45 are also not anticipated by Chow.

IV. Rejections Under 35 U.S.C. §103(a)

Claims 20-24 and 44 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Quake in view of Chow. As stated in the Office Action, this rejection is based on the premise that Quake anticipates claims 1 and 25. Since Quake does not anticipate those claims (as discussed above), the premise underlying this §103(a) rejection is false. Thus claims 20-24 and 44 are not obvious in light of the combination of Quake and Chow.

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Claims 9, 17, 28 and 29 were rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Quake in view of Moles (U.S. Pat. 5,932,799) ("Moles"). Again, as stated in the Office Action, this rejection is based on the premise that Quake anticipates claims 1 and 25. Since Quake does not anticipate those claims (as discussed above), the premise underlying this §103(a) rejection is false. Thus claims 9, 17, 28 and 29 are not obvious in light of the combination of Quake and Moles.

V. New claims

New claims 58-61 find support, for example, in the portion of the application extending from pg. 9 line 8 through pg. 10 line 5. The fee for adding these new claims has been transmitted in the same communication as this response.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants believe that the present application is in condition for allowance and action toward that end is respectfully requested. If the Examiner believes that a telephone interview would expedite the examination of this application, the Examiner is requested to contact the undersigned at the telephone number below.

Respectfully submitted,



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